

WHAT IS CLAIMED IS:

1. A system responsive to client requests for delivering data via a network to a client, said system comprising:

at least one dispatch server receiving the client requests;

a plurality of network servers;

5 dispatch software executing in application-space on the dispatch server to selectively assign the client requests to the network servers; and

protocol software, executing in application-space on the dispatch server and each of the network servers, to interrelate the dispatch server and network servers as ring members of a logical, token-passing, fault-tolerant ring network,

10 wherein the plurality of network servers are responsive to the dispatch software and the protocol software to deliver the data to the clients in response to the client requests.

2. The system of claim 1, wherein the system is structured according to an Open Source Interconnection (OSI) reference model, wherein the dispatch software performs switching of the client requests at layer 4 of the OSI reference model and translates addresses associated the client requests at layer 2 of the

5 OSI reference model, and wherein the protocol software comprises reconstruction software to coordinate state reconstruction after fault detection.

3. The system of claim 1, wherein the protocol software comprises broadcast messaging software to coordinate broadcast messaging among the ring members.

4. The system of claim 1, wherein the dispatch software executes in application-space on each of the network servers to functionally convert one of the network servers into a new dispatch server after detecting a fault with the dispatch server.

5. The system of claim 1, wherein one of the ring members circulates a self-identifying heartbeat message around the ring network.

6. The system of claim 1, wherein the protocol software includes out-of-band messaging software for coordinating creation and transmission of tokens by

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the ring members.

7. The system of claim 1, wherein the system is structured according to a multi-layer reference model, wherein the protocol software communicates at any one of the layers of the reference model.

8. The system of claim 7, wherein the reference model is the Open Source Interconnection (OSI) reference model, and wherein the dispatch software performs switching of the client requests at layer 4 of the OSI reference model and translates addresses associated with the client requests at layer 2 of the OSI reference model.

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9. The system of claim 7, wherein the reference model is the Open Source Interconnection (OSI) reference model, and wherein the dispatch software performs switching of the client requests at layer 4 of the OSI reference model and translates addresses associated with the client requests at layer 3 of the OSI reference model.

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10. The system of claim 7, wherein the reference model is the Open Source Interconnection (OSI) reference model, and wherein the dispatch software performs switching of the client requests at layer 7 of the OSI reference model and then performs switching of the client requests at layer 3 of the OSI reference model.

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11. The system of claim 10, wherein the dispatch software includes caching, and wherein said caching is tunable to adjust the delivery of the data to the client whereby a response time to specific client requests is reduced.

12. The system of claim 7, wherein the dispatch software executes in application-space to selectively assign a specific client request to one of the network servers based on the content of the specific client request.

13. The system of claim 1, further comprising packets containing messages, wherein a plurality of the packets simultaneously circulate the ring network, wherein the ring members transmit and receive the packets.

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14. The system of claim 1 wherein the protocol software of a specific ring member includes at least one state variable.

15. The system of claim 1 wherein the faults are symmetric-omissive.

16. The system of claim 1 wherein the protocol software includes ring expansion software for adapting to the addition of a new network server to the ring network.

17. A system responsive to client requests for delivering data via a network to a client, said system comprising:

at least one dispatch server receiving the client requests;
a plurality of network servers;

5 dispatch software executing in application-space on the dispatch server to selectively assign the client requests to the network servers, wherein the system is structured according to an Open Source Interconnection (OSI) reference model, and wherein said dispatch software performs switching of the client requests at layer 4 of the OSI reference model; and

10 protocol software, executing in application-space on the dispatch server and each of the network servers, to interrelate the dispatch server and network servers as ring members of a logical, token-passing, fault-tolerant ring network, wherein the plurality of network servers are responsive to the dispatch software and the protocol software to deliver the data to the clients in response to the client requests.

18. The system of claim 17, wherein the dispatch software translates addresses associated with the client requests at layer 2 of the OSI reference model.

19. The system of claim 17, wherein the dispatch software translates addresses associated with the client requests at layer 3 of the OSI reference model.

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20. A system responsive to client requests for delivering data via a network to a client, said system comprising:
- at least one dispatch server receiving the client requests;
 - a plurality of network servers;
- 5 dispatch software executing in application-space on the dispatch server to selectively assign the client requests to the network servers, wherein the system is structured according to an Open Source Interconnection (OSI) reference model, wherein the dispatch software performs switching of the client requests at layer 7 of the OSI reference model and then performs switching of the client
- 10 requests at layer 3 of the OSI reference model; and
- protocol software, executing in application-space on the dispatch server and each of the network servers, to organize the dispatch server and network servers as ring members of a logical, token-passing, ring network, and to detect a fault of the dispatch server or the network servers, wherein the plurality of network
- 15 servers are responsive to the dispatch software and the protocol software to deliver the data to the clients in response to the client requests.
21. A method for delivering data to a client in response to client requests for said data via a network having at least one dispatch server and a plurality of network servers, said method comprising the steps of:
- receiving the client requests;
 - 5 selectively assigning the client requests to the network servers after receiving the client requests;
 - delivering the data to the clients in response to the assigned client requests;
- 10 organizing the dispatch server and network servers as ring members of a logical, token-passing, ring network;
- detecting a fault of the dispatch server or the network servers; and
 - recovering from the fault.
22. The method of claim 21, further comprising the step of coordinating broadcast messaging among the ring members.
23. The method of claim 21, wherein the step of selectively assigning comprises the step of switching the client requests at layer 4 of an Open Source Interconnection (OSI) reference model.

24. The method of claim 23, further comprising the step of coordinating state reconstruction after fault detection.

25. The method of claim 24, wherein the step of coordinating state reconstruction includes functionally converting one of the network servers into a new dispatch server after detecting a fault with the dispatch server.

26. The method of claim 25, further comprising the step of the new dispatch server querying the network servers for a list of active connections and entering the list of active connections into a connection map associated with the new dispatch server.

27. The method of claim 21, wherein the protocol software includes packets, said method further comprising the steps of a specific ring member:

receiving the packets from a ring member with an address which is numerically smaller and closest to an address of the specific ring member; and

5 transmitting the packets to a ring member with an address which is numerically greater and closest to the address of the specific ring member, wherein a ring member with the numerically smallest address in the ring network receives the packets from a ring member with the numerically greatest address in the ring network, and wherein the ring member with the numerically greatest address in the ring network transmits the packets to the ring member with the numerically smallest address in the ring network.

10 28. The method of claim 21 wherein the step of selectively assigning the client requests to the network servers comprises the steps of:

routing each client request to the dispatch server;

determining whether a connection to one of the network servers exists for 5 each client request;

creating the connection to one of the network servers if the connection does not exist;

recording the connection in a map maintained by the dispatch server;

modifying each client request to include an address of the network server 10 associated with the created connection; and

forwarding each client request to the network server via the created connection.

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29. The method of claim 21 further comprising the step of detecting and recovering from at least one fault by one or more of the ring members.

30. The method of claim 29, wherein the step of detecting and recovering comprises the steps of:

detecting the fault by failing to receive communications from the one or more of the ring members during a communications timeout interval; and

rebuilding the ring network without the one or more of the ring members.

31. The method of claim 30, wherein the one or more of the ring members includes the dispatch server, further comprising the step of identifying during a broadcast timeout interval a new dispatch server from one of the ring members in the rebuilt ring network.

32. The method of claim 31, wherein the step of selectively assigning comprises the step of switching the client requests at layer 4 of an Open Source Interconnection (OSI) reference model, further comprising the steps of:

broadcasting a list of connections maintained prior to the fault in response
5 to a request;

receiving the list of connections from each ring member; and

updating a connection map maintained by the new dispatch server with the list of connections from each ring member.

33. The method of claim 31 wherein the step of identifying during a broadcast timeout interval a new dispatch server comprises the step of identifying during a broadcast timeout interval a new dispatch server by selecting one of the ring members in the rebuilt ring network with the numerically smallest address in the ring network.

34. The method of claim 21 further comprising the step of adapting to the addition of a new network server to the ring network

35. A system for delivering data to a client in response to client requests for said data via a network having at least one dispatch server and a plurality of network servers, said system comprising:

means for receiving the client requests:

- 5 means for selectively assigning the client requests to the network servers after receiving the client requests;
 - means for delivering the data to the clients in response to the assigned client requests;
 - means for organizing the dispatch server and network servers as ring members of a logical, token-passing, ring network;
 - 10 means for detecting a fault of the dispatch server or the network servers; and
 - means for recovering from the fault.